

**REMARKS**

Claims 1-18 are pending in this application. Claims 1, 5, 7, 13 and 17 have been amended by the present Amendment. Amended claims 1, 5, 7, 13 and 17 do not introduce any new subject matter.

**DRAWING OBJECTIONS**

The Examiner objects to the drawings "because in drawing 11A and 12A, the reference numerals 800, 810, 820 and 900, 910 and 920 do not correctly correspond to the text of the specification."

Applicants have amended the drawings by changing Figs. 11A and 11B to Figs. 12A and 12B, and Figs. 12A and 12B to Figs. 11A and 11B, respectively, so as to be consistent with the specification. In accordance with 37 C.F.R. § 1.121(d), Applicants file herewith replacement sheets for Figs. 11A, 11B, 12A and 12B.

Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

**Additional Drawing Change**

Applicants have also amended Fig. 7 to switch reference numerals 251 and 252, and file herewith a replacement sheet for Fig. 7.

Applicants submit that the changes to the drawings represent corrections of inadvertent errors, and do not constitute new matter.

**CLAIM OBJECTIONS**

The Examiner objects to claim 5 because "lines 8-9 recite a conductive bump electrically connected to a driving IC that applies a predetermined signal to the electrode pad by using a non-conductive resin." The Examiner suggests that the

phrase be rewritten "so that it is not suggested that the non-conductive resin supplies electricity or a signal."

Applicants have amended claim 5, and similarly claim 1, to recite that the conductive bump is electrically connected to a driving IC using a non-conductive resin, wherein the driving IC applies a predetermined signal to the electrode pad via the conductive bump.

Accordingly, Applicants respectfully request that the Examiner withdraw the objection to claim 5.

The Examiner objects to claim 13 because "line 4 reads, 'the LCD apparatus comprising' which should be corrected to read, 'the method comprising.'" Applicants have corrected claim 13 in accordance with the Examiner's recommendation.

As such, Applicants respectfully request that the Examiner withdraw the rejection to claim 13.

Additional Claim Amendments

Applicants have amended claims 7 and 13 to more clearly define the claimed embodiments. In addition, Applicants have amended claim 17 to correct a typographical error.

Applicants submit that no new matter is added by the claim amendments.

REJECTION UNDER 35 U.S.C. § 102

Reconsideration is respectfully requested of the rejection of claims 1, 2 and 4-6 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,798,812 ("Nishiki").

Independent claims 1 and 5, recite, *inter alia*, a conductive bump including a protrusion member disposed on the electrode pad with a predetermined thickness and

a conductive coating layer disposed on the protrusion member to be electrically connected to the electrode pad.

For example, referring to Applicants' disclosure, conductive bumps 250 including protrusion members 251 and coating layers 252 disposed on the protrusion members 251 are formed on electrode pads 270a, 270b and 280a, 280b. See, e.g., Applicants' disclosure, Fig. 3 and corresponding discussion.

The Examiner maintains that Nishiki discloses the claimed protrusion member formed on the electrode pad, and refers to element 10 shown in Fig. 2D. However, in contrast to the claimed embodiments, the thin organic film protrusions 10 of Nishiki are positioned between adjoining gate line terminals 8 and/or between adjoining source line terminals 9. See Nishiki, col. 5, lines 21-30; Figs. 1 and 2. Accordingly, unlike the claimed embodiments, the protrusions 10 are not formed on the electrode pads as claimed. Furthermore, contrary to the Examiner's assertion, the ITO film 6a in Nishiki is not disposed on the protrusions 10.

Accordingly, Applicants submit that claims 1 and 5 are not anticipated by Nishiki. For at least the reason that claims 2 and 4 depend from claim 1, and claim 6 depends from claim 5, claims 2, 4 and 6 are also submitted not to be anticipated by the cited reference.

As such, Applicants respectfully request that the Examiner withdraw the rejection of claims 1, 2 and 4-6 under 35 U.S.C. § 102(b).

#### **REJECTIONS UNDER 35 U.S.C. § 103**

Reconsideration is respectfully requested of the rejection of: (1) claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Pub. No.

2002/0122143 ("Woo") in view of European Patent Application Pub. No. 0827190 ("Chang") and U.S. Patent No. 5,089,750 ("Hatada"); (2) claims 7-11 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Woo in view of Chang; (3) claims 14-16 under 35 U.S.C. § 103(a) as being unpatentable over Woo in view of Chang as applied to claim 13, and further in view of U.S. Patent No. 6,380,559 ("Park"); (4) claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Woo in view of Chang and Park as applied to claim 14, and further in view of U.S. Patent No. 6,384,888 ("Komatsu"); and (5) claims 12 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Woo in view of Chang as applied to claims 7 and 13, and further in view of Hatada.

*There Is No Motivation To Combine Woo With  
Chang To Develop The Claimed Embodiments*

In rejecting claims 1, 5, 7 and 13, the Examiner admits that Woo fails to disclose a conductive bump including a protrusion member disposed on an electrode pad, and a conductive coating layer disposed on the protrusion member. See, e.g., February 20, 2007 Office Action at 6.

The Examiner relies on Chang to cure the deficiency in Woo. However, Applicants respectfully submit that there is no motivation to modify Woo with the teachings of Chang to develop the claimed embodiments.

Woo seeks to provide an improved method of fabricating an LCD panel, whereby the LCD panel provides an optical path so that light can be incident on a photo-hardening sealant bonding first and second substrates. See Woo at ¶¶ 0027 and 0032.

The optical path is provided, in part, by gate and data pad links PL\_g and PL\_d formed of a transparent conductive material that transmits the light so as to permit more effective curing. See id. at ¶¶ 0033 and 0058. Further, Woo seeks to apply its

embodiments to a method for thinning a substrate. See id. at ¶ 0076.

In Woo, the gate and data pad links PL\_g and PL\_d are formed at the same time as a transparent conductive film 63 for connecting the gate and data pads GP and DP with the tape carrier package (TCP) and anisotropic conductive film (ACF). See Woo at ¶ 0052. Indeed, referring to Figs. 7, 8, 9A and 9B of Woo, the transparent conductive film 63 and gate and data pad links PL\_g and PL\_d are simultaneously formed by depositing a layer of transparent conductive material on the protection film 83 and patterning same.

As a result, a limited number of steps are performed to interconnect the transparent conductive film, gate and data pads, gate and data pad links and gate and data lines, while still achieving the main objective of providing the optical path through the transparent gate and data pad links.

If Woo were modified in the manner suggested by the Examiner to replace the transparent conductive film with a conductive bump structure, the method for fabricating the LCD panel would be greatly complicated. The different structure proposed by the Examiner would require additional formation steps, and eliminate the streamlined simultaneous formation of the transparent conductive film 63 with the gate and data pad links PL\_g and PL\_d. Furthermore, the addition of conductive bumps would be contrary to Woo's objective of applying its methods to thinning a substrate.

Indeed, one of ordinary skill in the art would not be motivated to change the structure in Woo, since Woo's structure works in conjunction with the objectives of Woo to form the transparent gate and date pad links and a thin substrate. In contrast, the proposed modification would work against and frustrate the objectives of Woo. See

M.P.E.P. § 2143.01 ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)).

As such, Applicants submit that there is no motivation for the proposed modification, and that the rejections based on Woo and Chang are legally deficient.

Chang Fails To Disclose A Width Of The Protrusion Member Less Than Or Equal To A Width Of An Electrode Of A Driving IC

Claims 1, 5, 7 and 13 have been amended to recite that a width of the protrusion member is smaller than or equal to a width of the electrode of the driving IC. See, e.g., Applicants' disclosure, Fig. 3 (elements 510 and 251).

As stated above, the Examiner admits that Woo fails to disclose a conductive bump including a protrusion member disposed on an electrode pad, and a conductive coating layer disposed on the protrusion member. See, e.g., February 20, 2007 Office Action at 6.

The Examiner relies on Chang to cure the deficiency in Woo. However, in contrast to the claimed embodiment, Chang fails to teach or suggest a width of the polymer body 32 that is smaller than or equal to a width of an electrode of a driving IC. Indeed, Chang appears to be silent regarding any relationship between a width of the polymer body 32 and an electrode of a driving IC on which the polymer body 32 may be formed.

For at least this reason, Applicants respectfully submit that claims 1, 5, 7 and 13 are not rendered obvious by the combination of Woo and Chang.

Therefore, in view of the foregoing, Applicants respectfully submit that claims 1,

5, 7 and 13 are patentable over the cited references. In addition, for at least the reason that claims 2-4 depend from claim 1, claim 6 depends from claim 5, claims 8-12 depend from claim 7, and claims 14-18 depend from claim 13, claims 2-4, 6, 8-12 and 14-18 are also submitted to be patentable over the cited references.

As such, Applicants respectfully request that the Examiner withdraw the rejections of claims 1-18 under 35 U.S.C. § 103(a).

**DEPENDENT CLAIMS**

Applicants have not independently addressed the rejections of all the dependent claims because Applicants submit that for at least similar reasons as why the independent claims from which the dependent claims depend are believed allowable as discussed, supra, the dependent claims are also allowable. Applicants, however, reserve the right to address any individual rejections of the dependent claims should such be necessary or appropriate.

An early and favorable reconsideration is earnestly solicited. If the Examiner has any further questions or comments, the Examiner may telephone Applicants' Attorney to reach a prompt disposition of this application.

Respectfully submitted,



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